

# THE BUTTERFLYFISH *PROGNATHODES GUYOTENSIS* FROM THE MALDIVE ISLANDS, A FIRST RECORD FOR THE INDIAN OCEAN

by

John E. RANDALL (1) and George H.P. DE BRUIN (2)

**ABSTRACT.** - *Prognathodes guyotensis* (Yamamoto and Tameka, 1982), type locality Kyushu-Palau Ridge off Okinawa, is recorded from a single specimen, 85 mm SL, from 202 m off the Maldivé Islands. This constitutes the second record of the species and the first for the Indian Ocean. This butterflyfish was initially described in *Chaetodon*. It is here placed in *Prognathodes* Gill (type species, *Chelmo aculeatus* Poey), along with *Chaetodon aya* Jordan and allied species and *C. modestus* Schlegel.

**RÉSUMÉ.** - *Prognathodes guyotensis* (Yamamoto and Tameka, 1982), décrit de Kyushu-Palau Ridge au large d'Okinawa, est signalé ici à partir d'un seul exemplaire de longueur standard 85 mm, capturé à 202 m, au large des îles Maldives. C'est la deuxième mention de l'espèce et la première pour l'Océan Indien. Ce Chaetodontidae, initialement décrit dans le genre *Chaetodon*, est ici attribué au genre *Prognathodes* (espèce-type *Chelmo aculeatus* Poey) avec *Chaetodon aya* Jordan et les espèces voisines et *C. modestus* Schlegel.

Key-words : Chaetodontidae, *Prognathodes guyotensis*, Taxonomy, Indo-Pacific.

The butterflyfish genus *Chaetodon* was reviewed by Burgess (1978) in a monograph of the Chaetodontidae, and by Steene (1978) and Allen (1979) in volumes 1 and 2 of *Butterfly and Angelfishes of the World*. The last two authors recognized 90 species in the genus. These lovely, distinctively colored fishes have attracted much attention, both by scientists and laymen. In addition to systematic research, many papers have appeared concerning their behavior and ecology, and numerous popular articles have been written.

One might have believed that all of the recent species of Chaetodontidae would have been named by 1979 ; however, Lubbock and Edwards (1980) described *Chaetodon obliquus* from St. Paul's Rocks in the middle Atlantic, Myers (1980) *C. flavocoronatus* from Guam, Yamamoto and Tameka in Okamura et al. (1982) *C. guyotensis* from the Kyushu-Palau Ridge east of Okinawa, and Kuitert (1986) *Chelmonops curiosus* from southern Australia. The three species of *Chaetodon* occur in relatively deep water for the family, *C. guyotensis* being particularly unusual in its collection from 332-342 m on the top of a guyot.

The description of *C. guyotensis* was based on three specimens, the holotype, 114.7 mm SL, which was deposited in the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University, a 112.5 mm paratype in the Department of Biology, Faculty of Science, Kochi University, and a 104 mm paratype at the Fisheries Laboratory, Faculty of Agriculture, Miyazaki University.

The purpose of the present paper is to record a specimen of *C. guyotensis* from the Maldivé Islands, illustrate it, provide descriptive data, and clarify its generic status. We here place it in the genus *Prognathodes* Gill (see Remarks below).

(1) Bishop Museum, Box 19000 - A, Honolulu, Hawaii 96817 U.S.A.

(2) Formerly Director of Research, Fisheries Research Institute, Colombo, SRI LANKA.

*PROGNATHODES GUYOTENSIS* (Fig. 1)

*Chaetodon guyotensis* Yamamoto and Tameka in Okamura et al., 1982, 249, pl. 171, text-fig. 8 (type locality, Kyushu-Palau Ridge at 26°45.4'N, 135°21.1'E); Ida in Masuda et al., 1984 : 186, pl. 175).

**Material :** BPBM 30215, 85 mm SL, X, Maldives Islands, 202 m, bottom trawl from Norwegian fisheries research vessel "Dr. Fridtjof Nansen", August 1983.

**Description :** Dorsal fin rays XIII, 18 (last ray branched to base ; first spine abnormal, a 3 mm spine diverging from base on right side) ; anal fin rays III, 14 (last ray branched to base) ; pectoral fin rays 14 ; pelvic fin rays I,5 ; principal caudal rays 17 ; upper procurent caudal rays 4 ; lower procurent caudal rays 3 ; scales in longitudinal series on body 44 ; lateral-line scales 26 (possibly 27 ; one scale missing at end of series which may have been pored) ; scales above lateral line to origin of dorsal fin 9 ; scales above lateral line to origin of anal fin 18 ; gill rakers 4 + 13 ; branchiostegal rays 6 ; median predorsal bones 2 ; vertebrae 24.

Body deep, the depth 1.7 in SL, and compressed, the width 2.6 in depth ; head length 2.6 in SL ; snout somewhat produced, its length 3.3 in head ; orbit diameter 3.0 in head ; interorbital space slightly convex, the least bony width 4.4 in head ; least depth of caudal peduncle 1.75 in head.

Mouth small, the upper jaw 6.6 in head, slightly diagonal, the gape forming an angle of about 20° to the horizontal, the lower jaw slightly protruding ; teeth in jaws densely setiform, the longest 7.8 in orbit diameter, nostrils anterior to eye slightly above its center, the anterior in a short membranous tube with a well-developed posterior flap, the posterior slightly larger, ovate, with a low fleshy rim. Lower edge of lacrymal serrate ; margin of preopercle finely serrate ; margins of subopercle and interopercle partially and very finely serrate.

Lateral line forming a broad arc, ending below base of third to fourth dorsal soft rays. Scales ctenoid, moderately large on body except thorax where small ; head fully scaled except lips and region of nostrils, the scales small ; small scales from median fins largely lost, but appear to have covered most of soft portions and posterior spinous portions of dorsal and anal fins and at least basal part of caudal fin.

Origin of dorsal fin above upper end of gill opening ; first dorsal spine 3.15 in head ; second dorsal spine 1.85 in head ; fourth dorsal spine longest (though only 1 mm longer than third), 1.2 in head ; last dorsal spine 1.9 in head ; first three dorsal soft rays broken, but about 1.75 in head ; last dorsal soft ray 6 in head ; first anal spine 2.5 in head ; second anal spine 1.35 in head ; third anal spine slightly shorter than second, 1.45 in head ; most caudal rays broken, but fin length about 1.65 in head ; pectoral fins 1.3 in head ; pelvic spine 1.7 in head ; pelvic fins 1.35 in head.

Color in alcohol pale brown with a slightly diagonal blackish bar from nape through eye, continuing as a narrow vertical portion to anterior end of preopercular margin ; a median blackish streak dorsally on snout and upperlip ; a triangular blackish mark in midline of anterior half of interorbital space ; a broad diagonal blackish band commencing on spinous portion of dorsal fin between third membrane and base of seventh spine, crossing body to rear base of anal fin (where band narrows), and continuing broadly on outer soft portion a second diagonal black band posteriorly in dorsal fin parallel to the first ; caudal and pectoral fins pale ; pelvic fins blackish.

**Remarks :** Yamamoto and Tameka classified *Chaetodon guyotensis* in the subgenus *Roa* Jordan. According to Burgess (1978), this taxon is divided into two



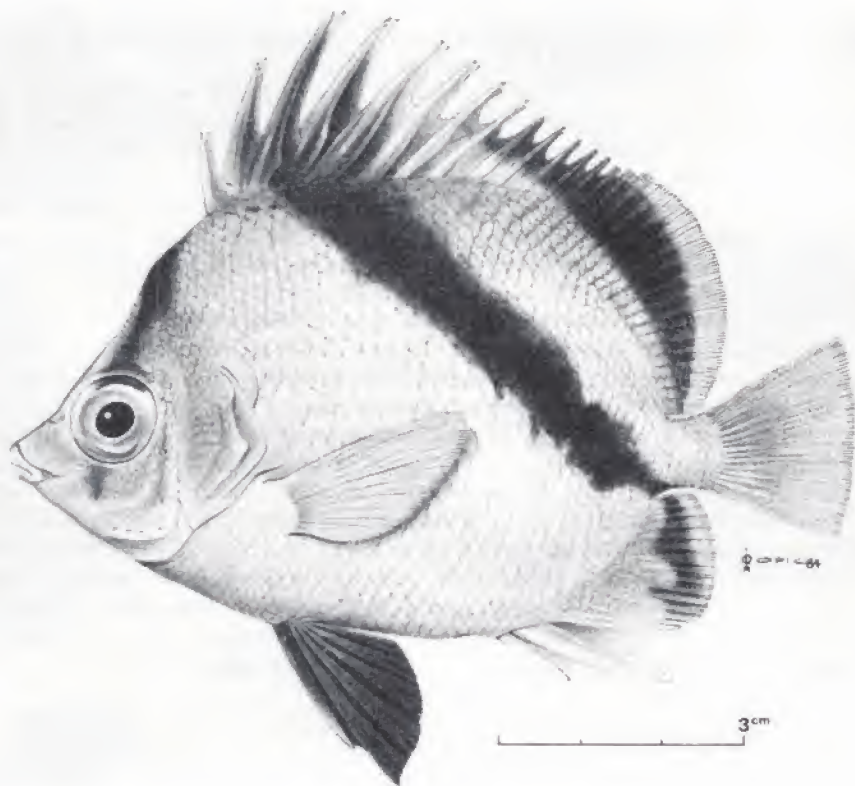


Fig. 1 : *Prognathodes guyotensis*, BPBM 30215, 85 mm SL, Maldive Islands.

species groups, the *tinkeri* complex, consisting of *C. tinkeri* Schultz, *C. mitratus* Günther, *C. burgessi* Allen and Starck, *C. declivis* Randall, and *C. flavocoronatus* Myers, all of which are allopatric within the Indo-Pacific region, and the *modestus* complex. He included *C. jayakari* Norman and *C. excelsa* (Jordan) with *C. modestus* Schlegel ; however, Allen (1979) has placed *jayakari* and *excelsa* in the synonymy of *modestus*. *C. nippon* Döderlein was also classified in the subgenus *Roa* by Burgess, though Myers (1980) has questioned this.

Yamamoto and Tameka pointed out that *C. guyotensis* seems to belong in the *tinkeri* complex because of its 13 dorsal spines and two oblique dark bands, but they added that it has some features of *C. modestus* such as the dark pelvic fins and a notched margin of the dorsal fin.

Maugé and Bauchot (1984) proposed four new genera of Chaetodontidae, among them *Roa* for the species of the *Chaetodon tinkeri* complex and *Mesochaetodon*, of which *C. nippon* was designated as the type species. They recognized *Prognathodes* (type species, *Chelmo plecta* Günther = *Chelmo aculeatus* Poey) as a valid genus (Burgess, 1978, regarded it as a subgenus of *Chaetodon*) and included the following species in the genus with *aculeatus* : *dichrous* (Günther, 1869), *aya* (Jordan, 1886), *marcellae* (Poll, 1950), *falcifer* (Hubbs and Rechnitzer, 1958), *guyanensis* (Durand, 1960), *guezeti* (Maugé and Bauchot, 1976), and *obliquus* (Lubbock and Edwards, 1980). They retained *Roa* a subgenus for *C. modestus*.

Nalbant (1984) also described a new genus, *Heminigellus*, for the *tinkeri* complex, but his name was published later in the year than September 28, the date of

publication of *Roa*, so it is a junior synonym. Like Maugé and Bauchot, he elevated *Prognathodes* to a genus and listed the same species for it.

S.D. Blum, who is making a study of the generic classification of the Chaetodontidae, has provisionally concluded that *Chaetodon modestus* should also be placed in the genus *Prognathodes*, thus *Roa* becomes a junior synonym of this genus (though it may be maintained as a subgenus of *Prognathodes*).

Our specimen of *guyotensis* and a radiograph of it were sent to Blum at the American Museum of Natural History in New York for his opinion on the correct genus for the species. He has placed it in *Prognathodes* on the basis of the following characters : third circumorbital bone with a large, ventrally directed lamina ; lateral line relatively short ; first soft rays of the dorsal fin longer than the last spines ; and a blackish median interorbital stripe. He also noted the presence of two separate predorsal bones, a primitive state indicating that *guyotensis* is not closely related to the species of *Roa*, all of which have fused predorsal bones.

The short lateral-line of *guyotensis*, ending below the anterior part of the soft portion of the dorsal fin, seems to be unique to this fish and some of the other species of *Prognathodes* such as *aculeatus* and *aya*. The number of lateral-line scales of *guyotensis* (recorded as 21-27 by Yamamoto and Tameka) is unusually low for a chaetodontid and similar to the number given for *P. aculeatus*, 22-29 (Hubbs, 1963 ; Randall, 1968) and *P. aya*, 23-31 (Blum, pers. com.). However, the lateral-line scale counts are relatively high for some species of *Prognathodes*, the highest being 42-46 for *P. falcifer* (Hubbs and Rechnitzer, 1963). *P. modestus* has 36-45 (Ida in Masuda et al., 1984). Burgess (1978) was in error in recording the lateral-line scales of the species of *Prognathodes* as "35-41 (normally 38-40)".

*Prognathodes guyotensis* and the other species of the genus have six branchiostegal rays, which is the primitive condition ; most chaetodontids have lost one branchiostegal ray. The species of *Roa*, however, also have six branchiostegal rays.

The specimen of *Chaetodon guyotensis* from the Maldives Islands matches the description of this species given by Yamamoto and Tameka very closely. One minor color difference was noted by us ; the supraorbital dark bar of the holotype begins at the origin of the dorsal fin whereas it is slightly anterior on the Maldives fish. Possibly this difference is due to the different size of the specimens ; the holotype measures 114.7 mm in SL and the Maldives specimen 85 mm.

**Acknowledgments.** - We thank Gunnar Saetersdal, the Director of the Norwegian Fisheries Research Institute, Bergen, for the participation of the junior author in the survey of the Maldives with the "Dr Fridtjof Nansen". We are especially grateful to Stanley D. Blum for his comments on the generic classification of chaetodontid fishes. In addition we thank Pierre Opic for the illustration and Arnold Y. Suzumoto for the radiograph.

## REFERENCES

- ALLEN G.R., 1979. - Butterfly and Angelfishes of the World. Vol. 2. John Wiley & Sons, New York : 149-352.
- BURGESS W.E., 1978. - Butterflyfishes of the World. T.F.H. Publications, Neptune City, New Jersey : 832 pp.
- HUBBS C.L., 1963. - *Chaetodon aya* and related deep-living butterflyfishes : their variation, distribution and synonymy. *Bull. Mar. Sci.*, 13 (1) : 133-192.
- HUBBS C.L. & A.B. RECHNITZER, 1958. - A new fish, *Chaetodon falcifer*, from Guadelupe Island, Baja California, with notes on related species. *Proc. Calif. Acad. Sci., ser. 4*, 29 (8) : 273-313.
- KUTTER R.C., 1986. - A new species of butterflyfishes, *Chelmonops curiosus*, from Australia's south coast. *Rev. Fr. Aquariol.*, 13 (3) : 73-78.

- LUBBOCK R. & A.J. EDWARDS, 1980. - A new butterflyfish (Teleostei : Chaetodontidae) of the genus *Chaetodon* from Saint Paul's Rocks. *Rev. Fr. Aquariol.*, 7 : 13-16.
- MASUDA H., K. AMAOKA, C. ARAGA, T. UYENO & T. YOSHINO (Eds), 1984. - The Fishes of the Japanese Archipelago, text and pls., Tokai Univ. Press. Tokyo : 437 pp.
- MAUGÉ A.L. & R. BAUCHOT, 1984. - Les genres et sous-genres de chaetodontidés étudiés par une méthode d'analyse numérique. *Bull. Mus. Natl. Hist. Nat. (Paris)*, 6 (2) : 453-485.
- MYERS R.F., 1980. - *Chaetodon flavocoronatus*, a new species of butterflyfish (Chaetodontidae) from Guam. *Micronesica*, 16 (2) : 297-303.
- NALBANT T.T., 1984. - Studies on Chaetodont fishes. II. *Heminigellus*, a new genus of butterflyfishes (Pisces, Chaetodontidae). *Trav. Mus. Hist. Nat. Grigore Antipa*, 26 : 239-240.
- OKAMURA O., AMAOKA K. & F. MITANI, 1982. - Fishes of the Kyushu-Palau Ridge and Tosa Bay. Japan Fisheries Resource Conservation Association, Tokyo : 435 pp.
- RANDALL J.E., 1968. - Caribbean Reef Fishes. T.F.H. Publications, Jersey City : 318 pp.
- STEENE R.C., 1978. - Butterfly and Angelfishes of the World. Vol. 1. A.H. & A.W. Reed Pty, Sydney : 144 pp.

Reçu le 17.3.1987

Accepté pour publication le 20.7.1987.